

Corneal abrasion

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Date of preparation: 25th June 2009

Conflict of interest: None declared

Clinical question: What is the best treatment for traumatic corneal abrasion?

Results: Eye patching does not reduce pain in patients with corneal abrasions.

Topical diclofenac does reduce pain in patients with corneal abrasions

Implementation: Pitfalls to avoid when treating abrasions:

- Treatment of small abrasions
- Treatment of larger abrasions
- When to refer for specialist treatment

Keywords: corneal abrasion, corneal epithelial surface, traumatic corneal abrasion

Corneal abrasion

Definition: A corneal abrasion is a defect in the corneal epithelial surface.

Etiology: Usually traumatic – but can occur spontaneously, eg, dry eyes, neurotrophic eyes.

Incidence: One study suggests that over 10% of new presentations at eye accident departments are for traumatic corneal abrasion.¹

Economics: No published study has addressed the economic issues of corneal abrasion. These would include the frequency of presentation to eye departments, time off work and cost of medications to the (usually younger) individuals.

Level of evidence used in this summary: Systematic reviews, meta-analyses, RCTs.

Search sources: PubMed, Cochrane Library, NHS evidence, DARE, clinical evidence.

Outcomes: From the patient perspective the main outcomes:

1. Speed of healing of the abrasion.
2. Pain relief during healing.
3. Avoidance of complications.

Consumer summary: A corneal abrasion is a scratch of the surface of the eye. It is usually caused accidentally, eg, a fingernail, contact lens. It is very painful immediately and medical attention should be sought. There is good evidence that a combination of drops is the quickest and most comfortable way to make the abrasion heal.

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The evidence

Do any interventions make a difference to the rate of healing?

Systematic reviews:	1
Meta-analysis:	1
Randomized controlled trials:	5

The Systematic Review² concluded that ‘Treating simple corneal abrasions with a patch does not improve healing rates

on the first day post-injury. In addition, use of patches results in a loss of binocular vision’.

The meta-analysis³ stated ‘Eye patching was not found to improve healing rates in patients with corneal abrasions’

Randomized trials – see table below. The studies generally found that padding the eye either made no difference to the rate of healing or that topical antibiotic and cycloplegia led to faster healing of the abrasion.

Table 1 RCTs comparing interventions with rate of healing

Author	Number randomized	Interventions	Outcome measures	Results
Kaiser ⁴ 1995	223	Both groups had antibiotic/cycloplegic. One group also padded.	Pain	Non pad group healed faster.
Kirkpatrick ⁵ 1993	44	Both groups had antibiotic/cycloplegic. One group also padded.	Pain	Non pad group healed faster.
Campinale ⁶ 1997	74	Both groups had antibiotic/cycloplegic. One group also padded.	Pain	Non pad group healed faster.
Arbour ⁷	48	Both groups had antibiotic/cycloplegic. One group also padded.	Pain	No difference in healing between groups.
Le Sage ⁸ 2001	163	Pad vs topical antibiotic	Pain	Non pad group healed faster.

Conclusions

Use a topical antibiotic and cycloplegic for traumatic corneal abrasions.

Which treatments are best for reducing the pain of a corneal abrasion?

Systematic reviews:	1
Meta-analysis	1
Randomized controlled trials:	7

The Systematic Review² concluded ‘Treating simple corneal abrasions with a patch does not reduce pain’.

The meta-analysis³ concluded ‘Eye patching was not found to reduce pain in patients with corneal abrasions’.

As far as the drop regime is concerned the interventions were variable so no specific regime was recommended.

RCTs – see Table 2. The studies generally found that padding the eye either made no difference to reported pain or in one study was more painful. Two studies indicate that topical diclofenac relieves abrasion pain more than placebo.

Conclusions

Eye patching does not reduce pain in patients with corneal abrasions.

Topical diclofenac does reduce pain in patients with corneal abrasions.

Recurrent corneal abrasion

See separate topic.

Table 2 RCTs comparing interventions with reported pain

Author	Number randomized	Interventions	Outcome measure(s)	Results
Kaiser ⁴ 1995	223	Both groups had antibiotic/cycloplegic. One group also padded.	Pain	Non-pad group reported less pain.
Kirkpatrick ⁵ 1993	44	Both groups had antibiotic/cycloplegic. One group also padded.	Pain	No difference in pain between groups.
Arbour ⁷	48	Both groups had antibiotic/cycloplegic. One group also padded.	Pain	No difference in healing between groups.
Le Sage ⁸ 2001	163	Pad vs. Topical antibiotic.	Pain	Pain free sooner in non pad group.
Patterson ⁹ 1996	50	Pad versus oral pain relief.	Pain	No significant difference in pain scores.
Jayamanne ¹⁰ 1997	40	G.Diclofenac 0.1% versus placebo.	Pain	Significantly less pain in Diclofenac group.
Szucs ¹¹ 2000	49	G.Diclofenac 0.1% versus placebo.	Pain	Significantly less pain with Diclofenac group.

The practice

Potential pitfalls

- Take care with contact lens wearers – they should be carefully monitored (review daily) with a slit lamp to look for signs of secondary infection. Normal CL wear should be avoided until healing has occurred and drops have been stopped.

Management

Corneal abrasion can be managed by non-specialists. Indications for specialist referral are given below.

Assessment

- There should be a history of direct trauma e.g. poked with a finger.
- If history suggests a more severe/high impact injury, eg, direct trauma with a sharp object, hammer and chisel fragment refer to an eye specialist.
- Ask about contact lens wear.
- Abrasions are easily seen with Fluorescein drops and a blue light.
- If the abrasion is apparently spontaneous abrasion think of recurrent abrasion syndrome (see topic).

Treatment

Small abrasions with moderate pain

- Chloramphenicol ointment qds until the eye feels comfortable.
- Review only if the eye becomes more painful.

Large (> 4 mm) and/or painful abrasions

- Chloramphenicol ointment qds, g. diclofenac drops 0.1% qds and g. cyclopentolate 1% tds to the affected eye.
- The patient should be warned their vision will be blurred secondary to the cyclopentolate and they should not drive.
- Review in 24 hours and if improving there is no need to review unless symptoms worsen again.

Bandage contact lenses should only be used in specialist departments and in those with experience of their use.

Indications for specialist referral

- A history of significant trauma
- Worsening of symptoms despite treatment
- Infiltrate around edge of abrasion (may suggest infection)
- Recurrent erosion syndrome

Further reading:

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